

### **ABSTRACT OF THE DISCLOSURE**

A method includes processing a plurality of workpieces to form at least one feature on each workpiece. A plurality of characteristics of the feature is measured. A covariance matrix including diagonal and non-diagonal terms for the plurality of characteristics  
5 measured is constructed. At least the non-diagonal terms of the covariance matrix are monitored. A sampling plan for measuring the workpieces is determined based on the monitoring. A system includes a plurality of tools, at least one metrology tool, and a sampling controller. The tools are configured to process a plurality of workpieces to form at least one feature on each workpiece. The metrology tool is configured to measure a plurality  
10 of characteristics of the feature. The sampling controller is configured to construct a covariance matrix including diagonal and non-diagonal terms for the plurality of characteristics measured, monitor at least the non-diagonal terms of the covariance matrix, and determine a sampling plan for measuring the workpieces based on the monitoring.